mucopidermoid carcinoma, and no review of advanced imaging characteristics. The purpose of this study was to present the common diagnostic imaging characteristics of intraosseous mucopidermoid carcinoma seen in plain radiography and computed tomography (CT). Two observers reviewed and recorded the imaging characteristics seen in plain films and 3 complete CT studies of 4 cases of histologically confirmed intraosseous mucopidermoid carcinoma. In addition, in 1 case the histopathologic features displayed in a whole section through the resected specimen correlated with the radiographic features. The following 5 imaging features were found to be common to all cases: a well defined sclerotic periphery, the presence of amorphous sclerotic bone within the lesion, numerous localizations (majority <8 mm in diameter), lack of septae bordering some of the localizations, and expansion and perforation of the outer cortical plate with extension into surrounding soft tissues. Other characteristics included tooth displacement and root resorption. Some of these characteristics are shared with both desmoplastic ameloblastoma and glandular odontogenic cyst; similarities and differences are presented.

**Basal Cell Adenocarcinoma: A Series of 39 Tumors. E. Bilodeau, L. Barnes, R. Seethala. U Pittsburgh, Pa.**

We report herein our experience with 39 basal cell adenocarcinomas (BCACs; 1993-2010) to further define the clinicopathologic features of this rare salivary gland malignancy. The mean age at presentation was 57.6 years, with no gender predilection. The most common sites were parotid gland (82.1%), submandibular gland (5.1%), and upper lip (5.1%); 22.8% of patients had a synchronous or asynchronous salivary gland tumor. One of these patients had Brooke-Spiegler syndrome. Four histologic subtypes were identified: membranous (41.0%), tubulotrabecular (23.1%), solid (20.5%), and cribriform (15.4%). All histologically tubulotrabecular tumors were low-to-intermediate nuclear grade; whereas 87.5% of solid and 43.8% of membranous variants were intermediate or high grade. Angiolymphatic invasion was seen in 20.5% of tumors. Perineural invasion was present in 33.3% of tumors. Of cases with associated normal salivary tissue, 25.8% exhibited precursor lesions, including intercalated duct hyperplasia, striated duct hyperplasia, and in 1 case eccrine duct hyperplasia. Patients presented with recurrent disease in 11.1% of cases (mean time to recurrence 65.8 months), all if which were cytologically intermediate or high grade. Two patients showed evidence of metastatic disease with sites including distal extremities (finger) and brain. Although BCACs are typically indolent, they can occasionally show high-grade histologic features and behave in an aggressive fashion. Membranous and solid tumors appear more aggressive than tubulotrabecular BCACs. Precursor lesions, such as intercalated and striated duct hyperplasia, are not infrequent.

**The Increased MUC1 Expression in Recurrence and Malignization of Salivary Gland Pleomorphic Adenoma. A.B. Soares, V.C. de Araujo, A. Altemani. São Leopoldo Mandic Institute and Research Center, State U Campinas, Brazil.**

Background. Pleomorphic adenoma (PA) is the most common salivary gland tumor. Although classified as benign, it presents a tendency to recur (RPA) and a risk of malignant transformation. It has been suggested that MUC-1 plays a role in the progression of many tumors, and in the salivary gland it was indicated as a marker to predict RPA. The aim of this study was to evaluate the MUC-1 expression in different phases of the adenoma-to-carcinoma sequence.

**Study design.** Twenty-one cases of PA, 18 cases of RPA, 3 cases of RPA with focal transformation, and 11 cases of carcinoma ex pleomorphic adenoma were analyzed for MUC1 expression by immunohistochemical technique using the antibodies MUC1/DF3.

**Results.** There was a significant difference in MUC1 expression in all of the groups. Comparing nonrecurrent with recurrent tumors, MUC1 reactivity in RPA was stronger than in PA. In all of the different groups of carcinoma, MUC-1 expression was significantly higher in carcinoma than in RPA and PA.

**Conclusion.** This study shows that carcinoma cells overexpress MUC1 and that this molecule is associated with the malignant transformation of this tumor. In addition, this research confirmed that MUC1 is related to the recurrence of PA.


**Background.** Salivary gland tumors comprise a group of tumors with a complex and unclear process of tumorigenesis. Previously we have shown a significant overexpression of Akt and Mdm2 in these tumors. Akt coordinates many proteins within the cell. PTEN and NFkB may play important roles in the understanding of the activation of Akt pathway. PTEN negatively regulates the Akt/PI3K pathway, which is important for cell growth, proliferation, and survival. NFkB activation is responsible for direct transcription of over 180 known NFkB target genes involved with survival and proliferation.

**Objective.** The aim of this study was to analyze the expression of PTEN and NFkB proteins in salivary gland tumors. Thirty-eight cases of adenoid cystic carcinoma (ACC), 45 of pleomorphic adenoma (PA), and 13 of carcinoma ex pleomorphic adenoma (EXPA) were submitted to immunohistochemistry. Normal salivary gland (NSG) was used as control.

**Results.** Strong cytoplasmic and negative nuclear staining of NFkB in almost all tumors was seen. Eight samples of PA and 1 EXPa showed low rates of nuclear staining. NSG showed variable cytoplasmic expression rates. PTEN stained the cytoplasm of all tumors and NSGs. Also, high rates of nuclear PTEN in all ACC and low rates in 3 EXPa were seen. NSG showed negative nuclear expression. Nuclear PTEN may be associated with other proteins blocking or inactivating tumor suppressors and its own function; therefore, in ACC PTEN may indicate an unexpected activity toward the classic PTEN pathway, and PTEN protein may also be associated with other proteins inactivating tumor suppressors.

**Conclusion.** This study strongly suggests that PTEN may be involved in tumor progression of ACC. On the other hand, cytoplasmic expression of NFkB is probably not significant due to the similarity with NSG.